

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P1048286

Luminaire Tested: **GALN-SA4B-722-U-T4BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1048286  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA4B-722-U-T4BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 800mA 4xLight Square PACKAGE  
70CRI 2200K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (56) 2200K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13364 lumens  
Efficiency: N/A  
Efficacy: 92.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G3

Input Watts (W): 144.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

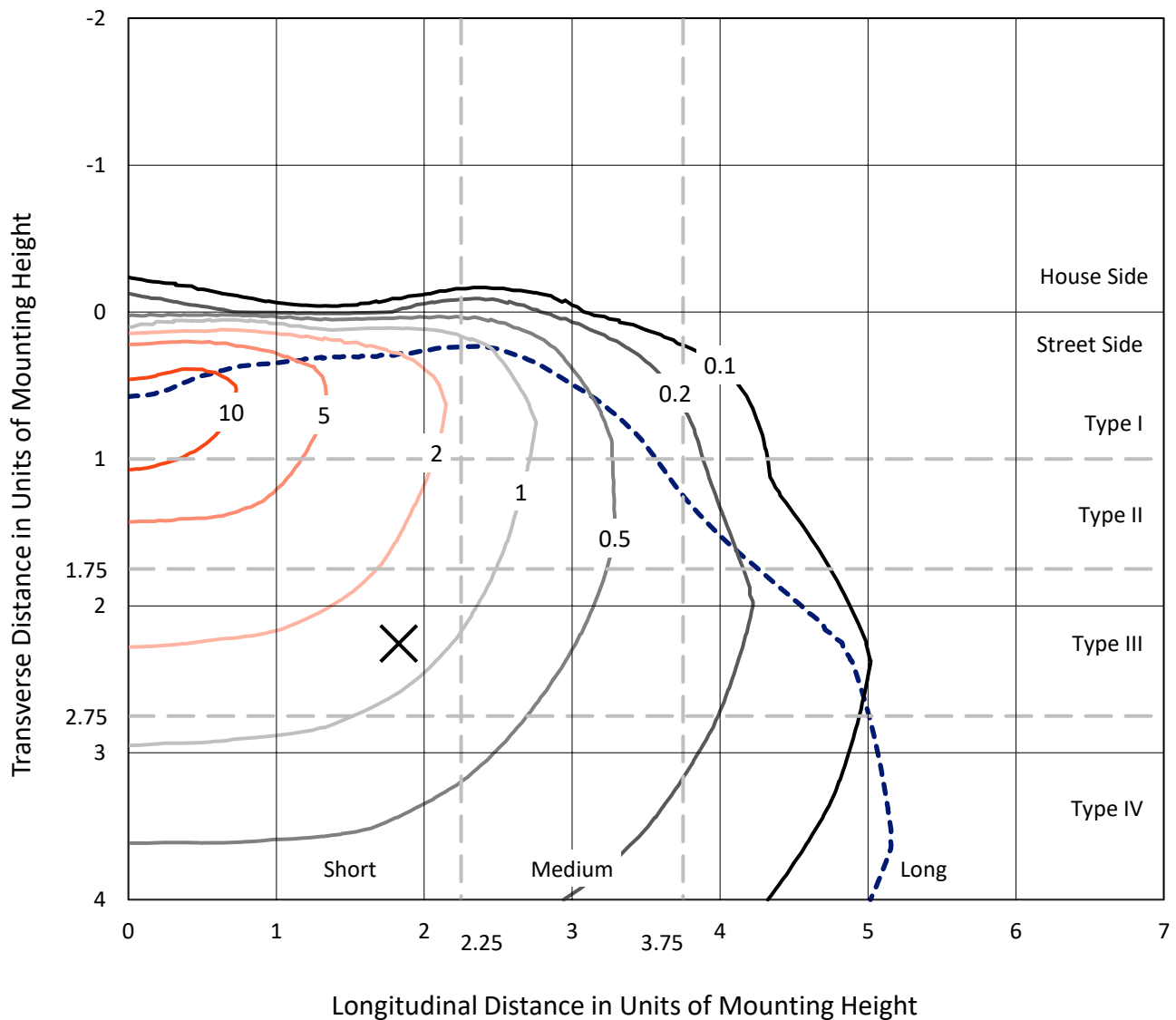


REPORT NUMBER: P1048286

CATALOG NUMBER: GALN-SA4B-722-U-T4BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

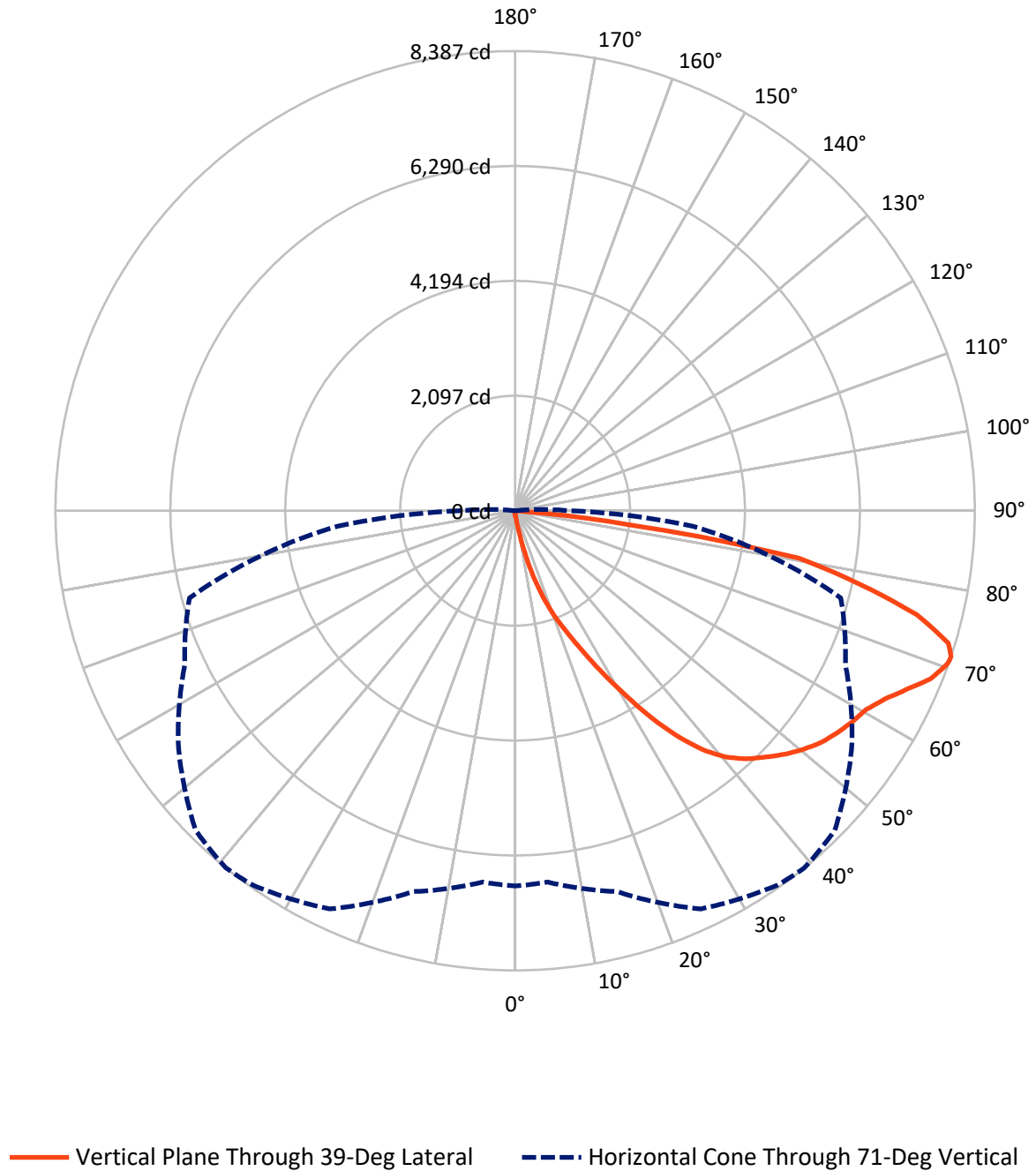


Based on 15 foot mounting height. Maximum calculated value = 13.7 fc  
 Type IV - Short - N/A

REPORT NUMBER: P1048286

CATALOG NUMBER: GALN-SA4B-722-U-T4BC

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA4B-722-U-T4BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 47.5     | 0.0    | 47.5    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 13316.6  | 0.0    | 13316.6 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 13364.0  | 0.0    | 13364.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 11.2    | 0.1       |
| 10°-20°   | 142.8   | 1.1       |
| 20°-30°   | 508.7   | 3.8       |
| 30°-40°   | 1225.9  | 9.2       |
| 40°-50°   | 2051.7  | 15.4      |
| 50°-60°   | 2635.2  | 19.7      |
| 60°-70°   | 3334.8  | 25.0      |
| 70°-80°   | 2973.1  | 22.2      |
| 80°-90°   | 480.6   | 3.6       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 13364.0 | 100.0     |
| 0°-180°   | 13364.0 | 100.0     |



REPORT NUMBER: P1048286

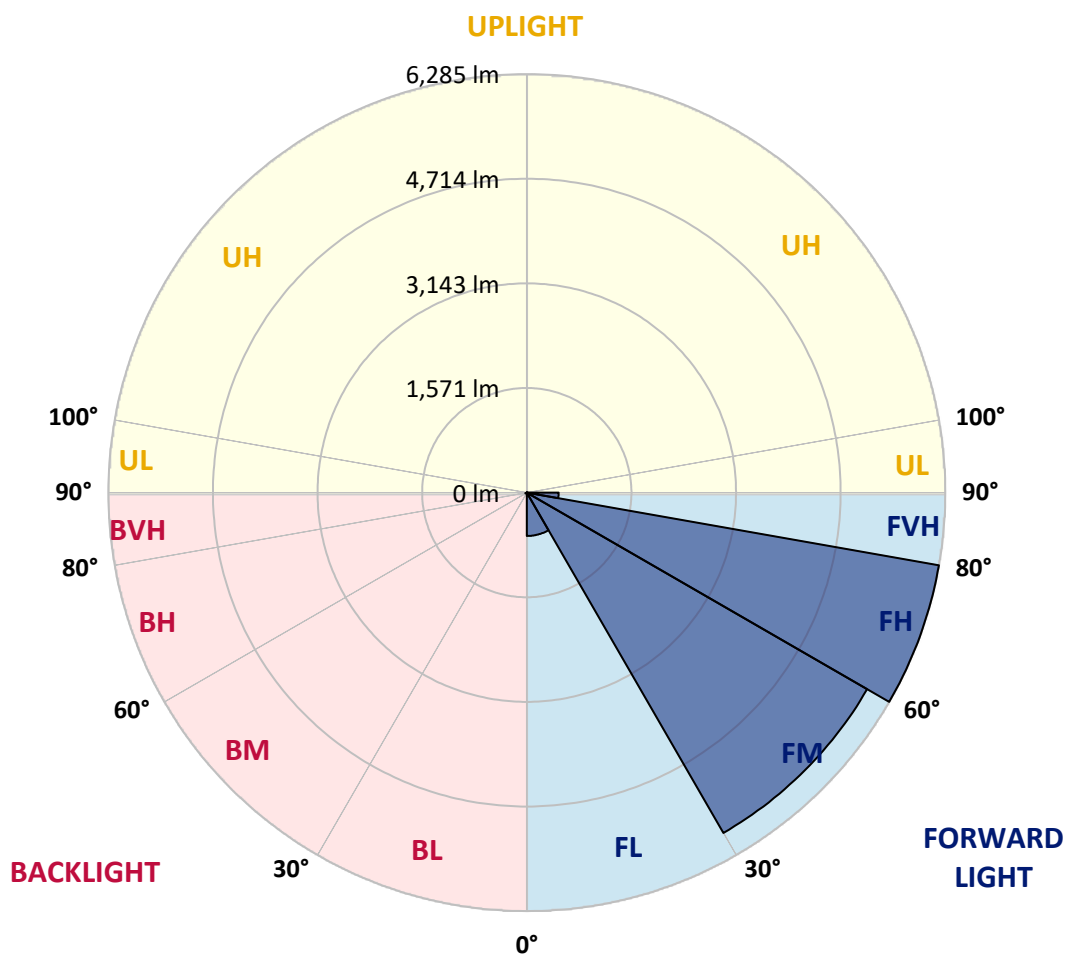
CATALOG NUMBER: GALN-SA4B-722-U-T4BC

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 651.2  | 4.9       |                         |      |         |
| FM   | (30°-60°)   | 5901.8 | 44.2      |                         |      |         |
| FH   | (60°-80°)   | 6285.1 | 47.0      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 478.4  | 3.6       |                         |      | G3/500  |
| BL   | (0°-30°)    | 11.5   | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 11.0   | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 22.8   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 2.2    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G3**

Type IV Short



REPORT NUMBER: P1048286

CATALOG NUMBER: GALN-SA4B-722-U-T4BC

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 39°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 73.3   | 73.3   | 73.3   | 73.3   | 73.3   | 73.3   | 73.3   | 73.3   | 73.3   | 73.3   | 73.3   |
| 2.5°  | 84.1   | 84.1   | 84.1   | 81.4   | 81.4   | 80.5   | 79.6   | 79.6   | 77.8   | 76.9   | 75.1   |
| 5°    | 127.6  | 124.8  | 118.5  | 114.9  | 107.7  | 103.1  | 98.6   | 92.3   | 85.9   | 81.4   | 76.0   |
| 7.5°  | 288.6  | 294.9  | 274.1  | 235.2  | 195.4  | 178.2  | 149.3  | 120.3  | 99.5   | 85.9   | 76.9   |
| 10°   | 735.5  | 731.9  | 661.3  | 583.5  | 450.5  | 397.2  | 311.2  | 196.3  | 128.5  | 94.1   | 77.8   |
| 12.5° | 1251.2 | 1247.5 | 1164.3 | 1058.5 | 883.0  | 771.7  | 608.8  | 366.4  | 184.6  | 106.8  | 77.8   |
| 15°   | 1684.5 | 1670.0 | 1643.8 | 1538.9 | 1333.5 | 1240.3 | 1025.0 | 647.7  | 298.5  | 128.5  | 79.6   |
| 17.5° | 1971.3 | 1958.6 | 1934.2 | 1896.2 | 1765.9 | 1655.6 | 1482.8 | 1017.8 | 483.1  | 166.5  | 83.2   |
| 20°   | 2234.5 | 2225.5 | 2205.6 | 2198.4 | 2114.2 | 2055.4 | 1912.5 | 1443.0 | 752.7  | 226.2  | 88.7   |
| 22.5° | 2596.4 | 2577.4 | 2585.6 | 2542.1 | 2459.8 | 2389.2 | 2301.5 | 1888.1 | 1082.0 | 325.7  | 98.6   |
| 25°   | 3039.7 | 3030.7 | 3008.0 | 2977.3 | 2863.3 | 2801.8 | 2667.0 | 2307.8 | 1450.2 | 456.0  | 109.5  |
| 27.5° | 3575.3 | 3565.3 | 3559.9 | 3489.3 | 3358.2 | 3291.2 | 3103.0 | 2704.1 | 1864.5 | 638.7  | 123.9  |
| 30°   | 4192.3 | 4196.8 | 4161.5 | 4071.0 | 3918.1 | 3824.1 | 3630.5 | 3119.3 | 2288.8 | 853.1  | 139.3  |
| 32.5° | 4831.0 | 4821.9 | 4767.6 | 4660.9 | 4524.3 | 4436.5 | 4190.5 | 3574.4 | 2733.9 | 1136.3 | 157.4  |
| 35°   | 5519.4 | 5502.2 | 5359.3 | 5237.2 | 5120.5 | 5010.1 | 4785.7 | 4102.7 | 3179.0 | 1453.8 | 181.8  |
| 37.5° | 6214.2 | 6133.7 | 5846.9 | 5692.2 | 5611.7 | 5521.2 | 5312.3 | 4666.3 | 3621.4 | 1808.4 | 211.7  |
| 40°   | 6738.9 | 6676.5 | 6336.3 | 6051.4 | 5987.1 | 5910.2 | 5754.6 | 5153.0 | 4091.8 | 2189.3 | 247.9  |
| 42.5° | 7029.3 | 6995.0 | 6689.2 | 6407.8 | 6256.7 | 6188.9 | 6055.9 | 5578.2 | 4556.9 | 2610.0 | 300.4  |
| 45°   | 7153.3 | 7099.9 | 6895.4 | 6764.3 | 6523.6 | 6411.4 | 6253.1 | 5899.4 | 5042.7 | 3087.7 | 373.6  |
| 47.5° | 7115.3 | 7084.5 | 6938.0 | 6985.9 | 6811.3 | 6636.7 | 6404.2 | 6145.5 | 5457.9 | 3635.9 | 474.0  |
| 50°   | 6876.4 | 6850.2 | 6805.0 | 7064.6 | 7042.9 | 6836.6 | 6599.6 | 6340.0 | 5797.2 | 4201.3 | 629.7  |
| 52.5° | 6422.3 | 6411.4 | 6527.2 | 7003.1 | 7174.1 | 7013.0 | 6787.8 | 6511.9 | 6113.8 | 4792.1 | 852.2  |
| 55°   | 5837.0 | 5881.3 | 6212.4 | 6907.2 | 7241.0 | 7143.3 | 6954.2 | 6672.9 | 6368.0 | 5320.4 | 1180.6 |
| 57.5° | 5596.3 | 5608.1 | 6021.5 | 6839.3 | 7270.9 | 7258.2 | 7116.2 | 6826.7 | 6601.4 | 5742.9 | 1681.8 |
| 60°   | 5877.7 | 5859.6 | 6077.6 | 6890.9 | 7330.6 | 7361.3 | 7260.0 | 6969.6 | 6804.1 | 6105.7 | 2349.4 |
| 62.5° | 6386.1 | 6376.2 | 6445.8 | 7110.7 | 7505.2 | 7567.6 | 7460.0 | 7072.8 | 6983.2 | 6344.5 | 3111.2 |
| 65°   | 6840.3 | 6819.4 | 6948.8 | 7500.7 | 7811.9 | 7856.2 | 7762.1 | 7249.2 | 7061.9 | 6518.2 | 3826.8 |
| 67.5° | 7036.6 | 7032.0 | 7240.1 | 7871.6 | 8133.9 | 8181.9 | 8099.6 | 7492.5 | 7043.8 | 6573.4 | 4142.5 |
| 70°   | 6947.0 | 6929.8 | 7262.7 | 8029.0 | 8315.8 | 8370.1 | 8290.4 | 7583.0 | 6847.5 | 6398.8 | 3674.8 |
| 71°   | 6848.4 | 6802.3 | 7194.9 | 8018.1 | 8341.1 | 8387.2 | 8247.9 | 7500.7 | 6650.3 | 6150.9 | 3250.5 |
| 72.5° | 6542.6 | 6550.8 | 7008.5 | 7905.1 | 8280.5 | 8266.9 | 8007.3 | 7205.7 | 6412.3 | 5588.2 | 2610.9 |
| 75°   | 5789.9 | 5837.9 | 6405.1 | 7430.1 | 7739.5 | 7566.7 | 7169.6 | 6642.1 | 5934.7 | 4006.8 | 1813.0 |
| 77.5° | 4731.5 | 4802.9 | 5426.2 | 6516.4 | 6428.6 | 6411.4 | 6395.2 | 5852.3 | 5068.0 | 2152.2 | 1261.1 |
| 80°   | 2259.0 | 2413.7 | 3273.1 | 4651.8 | 5053.5 | 5248.0 | 5125.9 | 4716.1 | 3919.1 | 1025.0 | 753.6  |
| 82.5° | 147.5  | 145.7  | 206.3  | 390.8  | 1647.4 | 2129.6 | 3383.5 | 3370.8 | 2732.1 | 499.4  | 307.6  |
| 85°   | 69.7   | 71.5   | 78.7   | 89.6   | 104.0  | 114.0  | 157.4  | 922.8  | 1307.3 | 237.9  | 66.9   |
| 87.5° | 40.7   | 41.6   | 48.9   | 62.4   | 81.4   | 90.5   | 107.7  | 138.4  | 170.1  | 131.2  | 14.5   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



REPORT NUMBER: P1048286

CATALOG NUMBER: GALN-SA4B-722-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 73.3   | 73.3 | 73.3 | 73.3 | 73.3 | 73.3 | 73.3 | 73.3 | 73.3 | 73.3 | 73.3 |
| 2.5°  | 74.2   | 73.3 | 70.6 | 67.9 | 65.1 | 63.3 | 62.4 | 63.3 | 63.3 | 64.2 | 64.2 |
| 5°    | 74.2   | 71.5 | 66.9 | 61.5 | 57.9 | 54.3 | 52.5 | 51.6 | 52.5 | 52.5 | 52.5 |
| 7.5°  | 73.3   | 68.8 | 62.4 | 56.1 | 51.6 | 47.0 | 45.2 | 44.3 | 44.3 | 45.2 | 45.2 |
| 10°   | 71.5   | 66.9 | 58.8 | 51.6 | 46.1 | 40.7 | 38.0 | 35.3 | 35.3 | 35.3 | 36.2 |
| 12.5° | 70.6   | 64.2 | 54.3 | 47.0 | 39.8 | 33.5 | 28.0 | 25.3 | 26.2 | 26.2 | 26.2 |
| 15°   | 68.8   | 61.5 | 51.6 | 42.5 | 33.5 | 25.3 | 20.8 | 18.1 | 19.0 | 19.9 | 19.0 |
| 17.5° | 68.8   | 60.6 | 47.9 | 37.1 | 26.2 | 19.0 | 15.4 | 13.6 | 13.6 | 14.5 | 14.5 |
| 20°   | 68.8   | 58.8 | 45.2 | 31.7 | 19.9 | 14.5 | 10.9 | 10.0 | 10.0 | 11.8 | 12.7 |
| 22.5° | 70.6   | 58.8 | 41.6 | 26.2 | 16.3 | 10.9 | 8.1  | 7.2  | 8.1  | 10.0 | 10.9 |
| 25°   | 73.3   | 57.9 | 38.0 | 23.5 | 13.6 | 8.1  | 6.3  | 4.5  | 5.4  | 7.2  | 8.1  |
| 27.5° | 76.0   | 57.0 | 34.4 | 20.8 | 10.9 | 6.3  | 4.5  | 3.6  | 2.7  | 3.6  | 3.6  |
| 30°   | 78.7   | 57.0 | 30.8 | 17.2 | 9.0  | 4.5  | 2.7  | 1.8  | 0.9  | 0.0  | 0.0  |
| 32.5° | 80.5   | 55.2 | 28.0 | 13.6 | 7.2  | 3.6  | 1.8  | 0.9  | 0.0  | 0.0  | 0.0  |
| 35°   | 82.3   | 53.4 | 24.4 | 10.9 | 5.4  | 2.7  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| 37.5° | 84.1   | 50.7 | 20.8 | 9.0  | 4.5  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 85.9   | 47.0 | 17.2 | 8.1  | 2.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 87.8   | 44.3 | 14.5 | 6.3  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 92.3   | 42.5 | 11.8 | 5.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 100.4  | 40.7 | 10.9 | 3.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 112.2  | 38.9 | 10.0 | 2.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 128.5  | 38.0 | 9.0  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 157.4  | 37.1 | 8.1  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 207.2  | 36.2 | 8.1  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 317.5  | 34.4 | 8.1  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 567.2  | 33.5 | 7.2  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 988.8  | 34.4 | 7.2  | 1.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 1417.6 | 36.2 | 6.3  | 2.7  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 1213.2 | 31.7 | 6.3  | 3.6  | 1.8  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 71°   | 988.8  | 28.0 | 6.3  | 3.6  | 1.8  | 0.9  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 636.0  | 21.7 | 5.4  | 3.6  | 1.8  | 1.8  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 268.7  | 18.1 | 5.4  | 3.6  | 2.7  | 1.8  | 1.8  | 0.9  | 0.0  | 0.0  | 0.0  |
| 77.5° | 114.9  | 13.6 | 5.4  | 4.5  | 3.6  | 2.7  | 2.7  | 1.8  | 0.9  | 0.0  | 0.0  |
| 80°   | 43.4   | 10.9 | 6.3  | 5.4  | 4.5  | 4.5  | 3.6  | 1.8  | 0.9  | 0.0  | 0.0  |
| 82.5° | 19.9   | 9.0  | 6.3  | 5.4  | 5.4  | 4.5  | 3.6  | 2.7  | 1.8  | 0.0  | 0.0  |
| 85°   | 12.7   | 8.1  | 6.3  | 5.4  | 5.4  | 4.5  | 4.5  | 2.7  | 1.8  | 0.0  | 0.0  |
| 87.5° | 10.0   | 8.1  | 6.3  | 6.3  | 5.4  | 5.4  | 3.6  | 2.7  | 0.9  | 0.0  | 0.0  |
| 90°   | 0.0    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-2

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-722-U-5WQ

Data in this report applies to families of products including GSS-SB1A-722-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-722-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 2200K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2160     | CRI (Ra): | 71.9 |      |       |
| CIE u':                   | 0.2927   | R1:       | 68.7 | R9:  | -17.8 |
| CIE v':                   | 0.5388   | R2:       | 82.6 | R10: | 60.5  |
| Duv:                      | 0.0015   | R3:       | 95.5 | R11: | 60.2  |
| CIE x:                    | 0.5130   | R4:       | 66.4 | R12: | 48.2  |
| CIE y:                    | 0.4197   | R5:       | 65.4 | R13: | 70.7  |
| CIE z:                    | 0.0674   | R6:       | 75.9 | R14: | 96.8  |
| Peak Wavelength (nm):     | 609      | R7:       | 77.2 | R15: | 61.8  |
| Dominant Wavelength (nm): | 587      | R8:       | 43.5 |      |       |
| Purity:                   | 79.96089 |           |      |      |       |
| Rf:                       | 70.6     |           |      |      |       |
| Rg:                       | 97.6     |           |      |      |       |



### Test Conditions

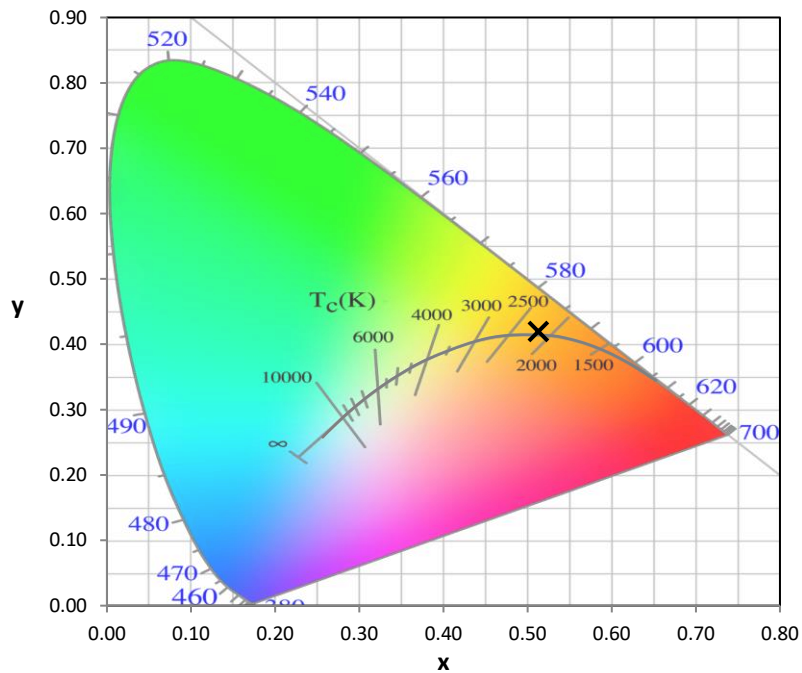
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-2

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

REPORT NUMBER: SP1-2407-184-2

**CIE 1931 Chromaticity Diagram**



**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2200K 7-step quadrangle

REPORT NUMBER: SP1-2407-184-2

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 27                                   | NR                             | 620               | 966                                  | NR                             | 750               | 46                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 42                                   | NR                             | 625               | 930                                  | NR                             | 755               | 39                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 67                                   | NR                             | 630               | 888                                  | NR                             | 760               | 34                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 101                                  | NR                             | 635               | 835                                  | NR                             | 765               | 30                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 139                                  | NR                             | 640               | 778                                  | NR                             | 770               | 26                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 183                                  | NR                             | 645               | 717                                  | NR                             | 775               | 22                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 224                                  | NR                             | 650               | 656                                  | NR                             | 780               | 19                                   | NR                             | 910               | 1                                    | NR                             |
| 395               | 0                                    | NR                             | 525               | 262                                  | NR                             | 655               | 595                                  | NR                             | 785               | 17                                   | NR                             | 915               | 1                                    | NR                             |
| 400               | 1                                    | NR                             | 530               | 299                                  | NR                             | 660               | 536                                  | NR                             | 790               | 15                                   | NR                             | 920               | 1                                    | NR                             |
| 405               | 3                                    | NR                             | 535               | 332                                  | NR                             | 665               | 480                                  | NR                             | 795               | 13                                   | NR                             | 925               | 1                                    | NR                             |
| 410               | 7                                    | NR                             | 540               | 365                                  | NR                             | 670               | 425                                  | NR                             | 800               | 11                                   | NR                             | 930               | 1                                    | NR                             |
| 415               | 17                                   | NR                             | 545               | 400                                  | NR                             | 675               | 376                                  | NR                             | 805               | 10                                   | NR                             | 935               | 0                                    | NR                             |
| 420               | 36                                   | NR                             | 550               | 437                                  | NR                             | 680               | 332                                  | NR                             | 810               | 8                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 67                                   | NR                             | 555               | 479                                  | NR                             | 685               | 291                                  | NR                             | 815               | 8                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 105                                  | NR                             | 560               | 525                                  | NR                             | 690               | 255                                  | NR                             | 820               | 7                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 141                                  | NR                             | 565               | 579                                  | NR                             | 695               | 221                                  | NR                             | 825               | 6                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 169                                  | NR                             | 570               | 639                                  | NR                             | 700               | 192                                  | NR                             | 830               | 5                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 173                                  | NR                             | 575               | 703                                  | NR                             | 705               | 167                                  | NR                             | 835               | 4                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 136                                  | NR                             | 580               | 769                                  | NR                             | 710               | 144                                  | NR                             | 840               | 4                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 80                                   | NR                             | 585               | 832                                  | NR                             | 715               | 125                                  | NR                             | 845               | 3                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 45                                   | NR                             | 590               | 890                                  | NR                             | 720               | 109                                  | NR                             | 850               | 3                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 32                                   | NR                             | 595               | 937                                  | NR                             | 725               | 94                                   | NR                             | 855               | 3                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 23                                   | NR                             | 600               | 972                                  | NR                             | 730               | 81                                   | NR                             | 860               | 2                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 18                                   | NR                             | 605               | 992                                  | NR                             | 735               | 70                                   | NR                             | 865               | 2                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 18                                   | NR                             | 610               | 998                                  | NR                             | 740               | 61                                   | NR                             | 870               | 2                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 20                                   | NR                             | 615               | 990                                  | NR                             | 745               | 53                                   | NR                             | 875               | 2                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2407-184-2

### Scotopic Flux vs. Wavelength



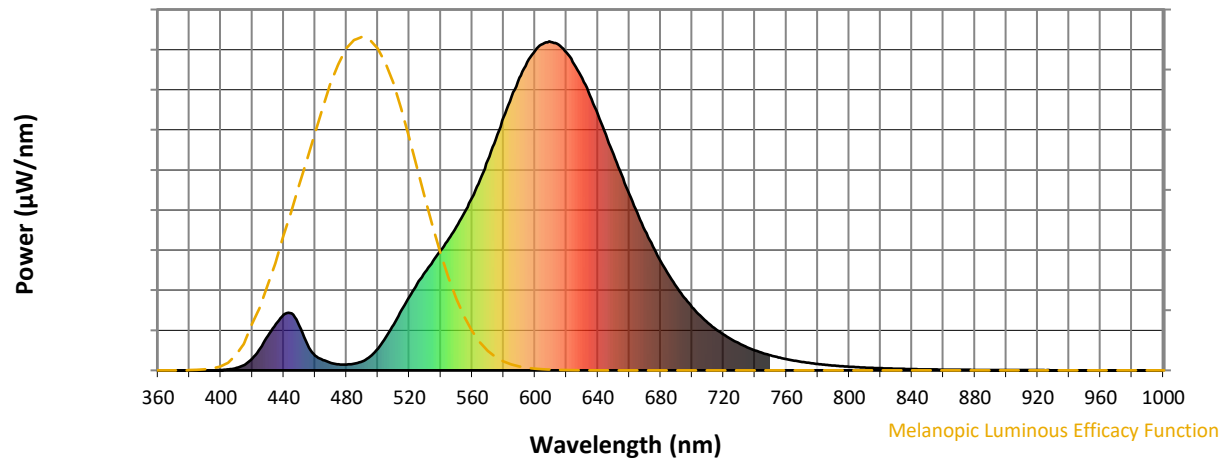
Scotopic Lumens: NR

S/P: 0.8

| λ (nm) | Power W <sup>λ</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (Φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 27                       | NR            | 620    | 966                      | NR            | 750    | 46                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 42                       | NR            | 625    | 930                      | NR            | 755    | 39                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 67                       | NR            | 630    | 888                      | NR            | 760    | 34                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 101                      | NR            | 635    | 835                      | NR            | 765    | 30                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 139                      | NR            | 640    | 778                      | NR            | 770    | 26                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 183                      | NR            | 645    | 717                      | NR            | 775    | 22                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 224                      | NR            | 650    | 656                      | NR            | 780    | 19                       | NR            | 910    | 1                        | NR            |
| 395    | 0                        | NR            | 525    | 262                      | NR            | 655    | 595                      | NR            | 785    | 17                       | NR            | 915    | 1                        | NR            |
| 400    | 1                        | NR            | 530    | 299                      | NR            | 660    | 536                      | NR            | 790    | 15                       | NR            | 920    | 1                        | NR            |
| 405    | 3                        | NR            | 535    | 332                      | NR            | 665    | 480                      | NR            | 795    | 13                       | NR            | 925    | 1                        | NR            |
| 410    | 7                        | NR            | 540    | 365                      | NR            | 670    | 425                      | NR            | 800    | 11                       | NR            | 930    | 1                        | NR            |
| 415    | 17                       | NR            | 545    | 400                      | NR            | 675    | 376                      | NR            | 805    | 10                       | NR            | 935    | 0                        | NR            |
| 420    | 36                       | NR            | 550    | 437                      | NR            | 680    | 332                      | NR            | 810    | 8                        | NR            | 940    | 0                        | NR            |
| 425    | 67                       | NR            | 555    | 479                      | NR            | 685    | 291                      | NR            | 815    | 8                        | NR            | 945    | 0                        | NR            |
| 430    | 105                      | NR            | 560    | 525                      | NR            | 690    | 255                      | NR            | 820    | 7                        | NR            | 950    | 0                        | NR            |
| 435    | 141                      | NR            | 565    | 579                      | NR            | 695    | 221                      | NR            | 825    | 6                        | NR            | 955    | 0                        | NR            |
| 440    | 169                      | NR            | 570    | 639                      | NR            | 700    | 192                      | NR            | 830    | 5                        | NR            | 960    | 0                        | NR            |
| 445    | 173                      | NR            | 575    | 703                      | NR            | 705    | 167                      | NR            | 835    | 4                        | NR            | 965    | 0                        | NR            |
| 450    | 136                      | NR            | 580    | 769                      | NR            | 710    | 144                      | NR            | 840    | 4                        | NR            | 970    | 0                        | NR            |
| 455    | 80                       | NR            | 585    | 832                      | NR            | 715    | 125                      | NR            | 845    | 3                        | NR            | 975    | 0                        | NR            |
| 460    | 45                       | NR            | 590    | 890                      | NR            | 720    | 109                      | NR            | 850    | 3                        | NR            | 980    | 0                        | NR            |
| 465    | 32                       | NR            | 595    | 937                      | NR            | 725    | 94                       | NR            | 855    | 3                        | NR            | 985    | 0                        | NR            |
| 470    | 23                       | NR            | 600    | 972                      | NR            | 730    | 81                       | NR            | 860    | 2                        | NR            | 990    | 0                        | NR            |
| 475    | 18                       | NR            | 605    | 992                      | NR            | 735    | 70                       | NR            | 865    | 2                        | NR            | 995    | 0                        | NR            |
| 480    | 18                       | NR            | 610    | 998                      | NR            | 740    | 61                       | NR            | 870    | 2                        | NR            | 1000   | 0                        | NR            |
| 485    | 20                       | NR            | 615    | 990                      | NR            | 745    | 53                       | NR            | 875    | 2                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-184-2

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.21

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 27                          | NR               | 620       | 966                         | NR               | 750       | 46                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 42                          | NR               | 625       | 930                         | NR               | 755       | 39                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 67                          | NR               | 630       | 888                         | NR               | 760       | 34                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 101                         | NR               | 635       | 835                         | NR               | 765       | 30                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 139                         | NR               | 640       | 778                         | NR               | 770       | 26                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 183                         | NR               | 645       | 717                         | NR               | 775       | 22                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 224                         | NR               | 650       | 656                         | NR               | 780       | 19                          | NR               | 910       | 1                           | NR               |
| 395       | 0                           | NR               | 525       | 262                         | NR               | 655       | 595                         | NR               | 785       | 17                          | NR               | 915       | 1                           | NR               |
| 400       | 1                           | NR               | 530       | 299                         | NR               | 660       | 536                         | NR               | 790       | 15                          | NR               | 920       | 1                           | NR               |
| 405       | 3                           | NR               | 535       | 332                         | NR               | 665       | 480                         | NR               | 795       | 13                          | NR               | 925       | 1                           | NR               |
| 410       | 7                           | NR               | 540       | 365                         | NR               | 670       | 425                         | NR               | 800       | 11                          | NR               | 930       | 1                           | NR               |
| 415       | 17                          | NR               | 545       | 400                         | NR               | 675       | 376                         | NR               | 805       | 10                          | NR               | 935       | 0                           | NR               |
| 420       | 36                          | NR               | 550       | 437                         | NR               | 680       | 332                         | NR               | 810       | 8                           | NR               | 940       | 0                           | NR               |
| 425       | 67                          | NR               | 555       | 479                         | NR               | 685       | 291                         | NR               | 815       | 8                           | NR               | 945       | 0                           | NR               |
| 430       | 105                         | NR               | 560       | 525                         | NR               | 690       | 255                         | NR               | 820       | 7                           | NR               | 950       | 0                           | NR               |
| 435       | 141                         | NR               | 565       | 579                         | NR               | 695       | 221                         | NR               | 825       | 6                           | NR               | 955       | 0                           | NR               |
| 440       | 169                         | NR               | 570       | 639                         | NR               | 700       | 192                         | NR               | 830       | 5                           | NR               | 960       | 0                           | NR               |
| 445       | 173                         | NR               | 575       | 703                         | NR               | 705       | 167                         | NR               | 835       | 4                           | NR               | 965       | 0                           | NR               |
| 450       | 136                         | NR               | 580       | 769                         | NR               | 710       | 144                         | NR               | 840       | 4                           | NR               | 970       | 0                           | NR               |
| 455       | 80                          | NR               | 585       | 832                         | NR               | 715       | 125                         | NR               | 845       | 3                           | NR               | 975       | 0                           | NR               |
| 460       | 45                          | NR               | 590       | 890                         | NR               | 720       | 109                         | NR               | 850       | 3                           | NR               | 980       | 0                           | NR               |
| 465       | 32                          | NR               | 595       | 937                         | NR               | 725       | 94                          | NR               | 855       | 3                           | NR               | 985       | 0                           | NR               |
| 470       | 23                          | NR               | 600       | 972                         | NR               | 730       | 81                          | NR               | 860       | 2                           | NR               | 990       | 0                           | NR               |
| 475       | 18                          | NR               | 605       | 992                         | NR               | 735       | 70                          | NR               | 865       | 2                           | NR               | 995       | 0                           | NR               |
| 480       | 18                          | NR               | 610       | 998                         | NR               | 740       | 61                          | NR               | 870       | 2                           | NR               | 1000      | 0                           | NR               |
| 485       | 20                          | NR               | 615       | 990                         | NR               | 745       | 53                          | NR               | 875       | 2                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-2

TM-30-18

### Summary

$R_f = 70.6$   
 $R_g = 97.6$   
 $CIE\ R_a = 71.9$   
 $R_g = -17.8$



### Color Vector Graphics



**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 60 | CES51 = 74 | CES76 = 58 |
| CES02 = 65 | CES27 = 77 | CES52 = 77 | CES77 = 82 |
| CES03 = 32 | CES28 = 85 | CES53 = 65 | CES78 = 65 |
| CES04 = 72 | CES29 = 50 | CES54 = 77 | CES79 = 86 |
| CES05 = 52 | CES30 = 49 | CES55 = 74 | CES80 = 85 |
| CES06 = 53 | CES31 = 55 | CES56 = 64 | CES81 = 61 |
| CES07 = 44 | CES32 = 55 | CES57 = 60 | CES82 = 93 |
| CES08 = 43 | CES33 = 55 | CES58 = 64 | CES83 = 83 |
| CES09 = 29 | CES34 = 75 | CES59 = 84 | CES84 = 93 |
| CES10 = 79 | CES35 = 88 | CES60 = 89 | CES85 = 81 |
| CES11 = 62 | CES36 = 78 | CES61 = 84 | CES86 = 55 |
| CES12 = 68 | CES37 = 82 | CES62 = 68 | CES87 = 79 |
| CES13 = 45 | CES38 = 54 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 86 | CES65 = 66 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 89 |
| CES17 = 51 | CES42 = 83 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 68 | CES68 = 71 | CES93 = 78 |
| CES19 = 74 | CES44 = 98 | CES69 = 81 | CES94 = 52 |
| CES20 = 68 | CES45 = 76 | CES70 = 65 | CES95 = 76 |
| CES21 = 89 | CES46 = 68 | CES71 = 64 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 88 | CES97 = 76 |
| CES23 = 92 | CES48 = 47 | CES73 = 59 | CES98 = 71 |
| CES24 = 92 | CES49 = 65 | CES74 = 85 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)